GENETICS

A PERIODICAL RECORD OF INVESTIGATIONS

BEARING ON HEREDITY AND VARIATION

Founded in 1916

and published by

The Genetics Society of America

VOLUME 130, JANUARY–APRIL, 1992

GENETICS VOLUME 130, JANUARY–APRIL, 1992

EDITORIAL BOARD

JOHN W. DRAKE, *Editor*
Chapel Hill, North Carolina

SALLY LYMAN ALLEN (1994)
University of Michigan

KAREN ARTZT (1993)
University of Texas, Austin

DOUGLAS E. BERG (1993)
Washington University School of Medicine

DAVID BOTSTEIN (1994)
Stanford University School of Medicine

JOHN E. BOYNTON (1992)
Duke University

ANTHONY H. D. BROWN (1994)
CSIRO Division of Plant Industry

BENJAMIN BURR (1992)
Brookhaven National Laboratory

MARIAN CARLSON (1993)
Columbia University

DEBORAH CHARLESWORTH (1994)
University of Chicago

PETER CHERBAS (1994)
Indiana University

ARTHUR CHOVNICK (1994)
University of Connecticut

ANDREW G. CLARK (1994)
Pennsylvania State University

THOMAS W. CLINE (1993)
University of California, Berkeley

ROWLAND H. DAVIS (1993)
University of California, Irvine

ROBIN E. DENELL (1992)
Kansas State University

NORMAN R. DRINKWATER (1992)
University of Wisconsin

WALTER F. EANES (1994)
State University of New York

VICTORIA G. FINNERTY (1993)
Emory University

MARGARET T. FULLER (1994)
Stanford University

ROGER E. GANSCHOW (1992)
Children's Hospital Research Foundation

MAUREEN R. HANSON (1992)
Cornell University

ROBERT K. HERMAN (1993)
University of Minnesota

ALAN G. HINNEBUSCH (1994)
National Institutes of Health

RICHARD R. HUDSON (1992)
University of California, Irvine

NANCY A. JENKINS (1992)
National Cancer Institute

MARK JOHNSTON (1994)
Washington University School of Medicine

ELIZABETH JONES (1993)
Carnegie-Mellon University

CATHY C. LAURIE (1994)
Duke University

WEN-HSIUNG LI (1994)
University of Texas at Houston

TRUDY F. C. MACKAY (1993)
North Carolina State University

PATRICIA J. PUKKILA (1992)
University of North Carolina

TRUDY SCHÜPBACH (1993)
Princeton University

WILLIAM F. SHERIDAN (1992)
University of North Dakota

MICHAEL J. SIMMONS (1994)
University of Minnesota

MONTGOMERY SLATKIN (1994)
University of California, Berkeley

GERALD R. SMITH (1992)
Fred Hutchinson Cancer Center

STEVEN D. TANKSLEY (1992)
Cornell University

ELIZABETH THOMPSON (1992)
University of Washington

BRUCE S. WEIR (1992)
North Carolina State University

FRED WINSTON (1994)
Harvard Medical School

Journal Production Editor, BILL VINCK
Editorial Assistant, PAMELA DRAKE

PUBLISHED AT BALTIMORE, MARYLAND
by the Genetics Society of America

Printed by the Waverly Press, Inc., Baltimore

TABLE OF CONTENTS

to Volume 130, January–April, 1992

AINGER, KEVIN, ELISA BARBARESE, LISA BERMAN and JOHN H. CARSON, Molecular genetic analysis of the *mld*^{r} mouse: a spontaneous revertant at the *mld* locus containing a recombinant myelin basic protein gene 367–375

ASCH, DAVID K., GREGORY FREDERICK, JOHN A. KINSEY and DAVID D. PERKINS, Analysis of junction sequences resulting from integration at nonhomologous loci in *Neurospora crassa* 737–748

BALLINGER, S. W., THEODORE G. SCHURR, ANTONIO TORRONI, Y. Y. GAN, J. A. HODGE, K. HASSAN, K.-H. CHEN and DOUGLAS C. WALLACE, Southeast Asian mitochondrial DNA analysis reveals genetic continuity of ancient Mongoloid migrations 139–152

BARAN, GEORGE, CRAIG ECHT, THOMAS BUREAU and SUSAN WESSLER, Molecular analysis of the maize *wx-B3* allele indicates that precise excision of the transposable *Ac* element is rare 377–384

BENSON, NICHOLAS, CURTIS ADAMS and PHILIP YOUDERIAN, Mutant λ repressors with increased operator affinities reveal new, specific protein-DNA contacts 17–26

BHARGAVA, JAYA, JOANNE ENGEBRECHT and G. SHIRLEEN ROEDER, The *rec102* mutant of yeast is defective in meiotic recombination and chromosome synapsis 59–69

BIRKY, C. WILLIAM, JR., and J. BRUCE WALSH, Biased gene conversion, copy number, and apparent mutation rate differences within chloroplast and bacterial genomes 677–683

BONNEMAIN, HUGUES, TADEUSZ GULIK-KRZYWICKI, CLAUDE GRANDCHAMP and JEAN COHEN, Interactions between genes involved in exocytotic membrane fusion in Paramecium 461–470

BROWN, JENNIFER, and VENKATESAN SUNDARESAN, Genetic study of the loss and restoration of *Mutator* transposon activity in maize: evidence against dominant-negative regulator associated with loss of activity 889–898

BROWN, MICHAEL D., ALEXANDER S. VOLJAVEC, MARIE T. LOTT, ANTONIO TORRONI, CHI-CHUAN YANG and DOUGLAS C. WALLACE, Mitochondrial DNA complex I and III mutations associated with Leber's hereditary opic neuropathy 163–173

CABALLERO, ARMANDO, AND WILLIAM G. HILL, Effective size of nonrandom mating populations 909–916

CAPY, PIERRE, AKIHIKO KOGA, JEAN R. DAVID and DANIEL L. HARTL, Sequence analysis of active *mariner* elements in natural populations of *Drosophila simulans* 499–506

CASE, MARY E., ROBERT F. GEEVER and DAVID K. ASCH, Use of gene replacement transformation to elucidate gene function in the *qa* gene cluster of *Neurospora crassa* 729–736

CHAKRABORTY, RANAJIT, Multiple alleles and estimation of genetic parameters: computational equations showing involvement of all alleles 231–234

CHEN, JYCHIAN, IRWIN M. GREENBLATT and STEPHEN L. DELLAPORTA, Molecular analysis of *Ac* transposition and DNA replication 665–676

CHEREST, HÉLÈNE, and YOLANDE SURDIN-KERJAN, Genetic analysis of a new mutation conferring cysteine auxotrophy in *Saccharomyces cerevisiae*: updating of the sulfur metabolism pathway 51–58

CHOUDHARY, M., M. B. COULTHART and R. S. SINGH, A comprehensive study of genic variation in natural populations of *Drosophila melanogaster*. VI. Patterns and processes of genic divergence between *D. melanogaster* and its sibling species, *Drosophila simulans* 843–853

COLE, ROBERT A., and KEITH L. WILLIAMS, Tandem repeats in extrachromosomal ribosomal DNA of *Dictyostelium discoideum*, resulting from chromosomal mutations . 757–769

CROW, JAMES F., Centennial: J. B. S. HALDANE, 1892–1964 1–6

CROW, JAMES F., ERWIN SCHRÖDINGER and the hornless cattle proglem 237–239

CROW, JAMES F., Twenty-five years ago in GENETICS: identical triplets 395–398

DATTA, SUMANA, and DOUGLAS R. KANKEL, *l(1)trol* and *l(1)devl*, loci affecting the development of the adult central nervous system in *Drosophila melanogaster* 523–537

DEVEAUX, LINDA C., NICOLE A. HOAGLAND and GERALD R. SMITH, Seventeen complementation groups of mutations decreasing meiotic recombination in *Schizosaccharomyces pombe* 251–262

EBERL, DANIEL F., LIZABETH A. PERKINS, MARCY ENGELSTEIN, ARTHUR J. HILLIKER and NORBERT PERRIMON, Genetic and developmental analysis of polytene section 17 of the *X* chromosome of *Drosophila melanogaster* 569–583

ELLIS, T. H. N., L. TURNER, R. P. HELLENS, D. LEE, C. L. HARKER, C. ENARD, C. DOMONEY and D. R. DAVIES, Linkage maps in pea 649–663

FLICK, JEFFREY S., and MARK JOHNSTON, Analysis of URS_G-mediated glucose repression of the *GAL1* promoter of *Saccharomyces cerevisiae* 295–304

GARFINKEL, MARK D., ALLAN R. LOHE and ANTHONY P. MAHOWALD, Molecular genetics of the *Drosophila melanogaster ovo* locus, a gene required for sex determination of germline cells 791–803

GIMELFARB, A., Pleiotropy and multilocus polymorphisms 223–227

GOOLEY, ANDREW, ROLF MARSHCHALEK and KEITH L. WILLIAMS, Size polymorphisms due to changes in the number of *O*-glycosylated tandem repeats in the *Dictyostelium discoideum* glycoprotein PsA 749–756

GRANADINO, BEGOÑA, ANA SAN JUÁN, P. SANTAMARIA and LUCAS SÁNCHEZ, Evidence of a dual function in *fl(2)d*, a gene needed for *Sex-lethal* expression in *Drosophila melanogaster* 597–612

GREENER, ALAN, SAMUEL M. LEHMAN and DONALD R. HELINSKI, Promoters of the broad host range plasmid RK2: analysis of transcription (initiation) in five species of Gram-negative bacteria 27–36

GUREVITCH, JESSICA, Sources of variation in leaf shape among two populations of *Achillea lanulosa* 385–394

HAZELRIGG, TULLE, and STEVEN PETERSEN, An unusual genomic position effect on Drosophila *white* gene expression: pairing dependence, interactions with *zeste*, and molecular analysis of revertants 125–138

HIEBERT, JOHN C., and JAMES A. BIRCHLER, Dosage compensation of the *copia* retrotransposon in *Drosophila melanogaster* 539–545

HILL, KATHRYN, CHARLES BOONE, MARK GOEBL, ROSANA PUCCIA, ANNE-MARIE SDICU and HOWARD BUSSEY, Yeast *KRE2* defines a new gene family encoding probable secretory proteins, and is required for the correct *N*-glycosylation of proteins 273–283

HOLLOCHER, HOPE, ALAN R. TEMPLETON, ROB DESALLE and J. SPENCER JOHNSTON, The molecular through ecological genetics of *abnormal abdomen*. IV. Components of genetic variation in a natural population of *Drosophila mercatorum* 355–366

HONIGBERG, SAUL M., CLARA CONICELLA and ROCHELLE EASTON ESPOSITO, Commitment to meiosis in *Saccharomyces cerevisiae*: involvement of the *SPO14* gene 703–716

HOULE, DAVID, Comparing evolvability and variability of quantitative traits 195–204

HUBBARD, E. JANE ALBERT, XIAOLU YANG and MARIAN CARLSON, Relationship of the cAMP-dependent protein kinase pathway to the SNF1 protein kinase and invertase expression in *Saccharomyces cerevisiae* 71–80

HURST, LAURENCE D., Is *Stellate* a relict meiotic driver? 229–230

JAMES, STEVEN W., and PAUL A. LEFEBVRE, Genetic interactions among *Chlamydomonas reinhardtii* mutations that confer resistance to antimicrotubule herbicides 305–314

JOHNSON, NORMAN A., and CHUNG-I WU, An empirical test of the meiotic drive models of hybrid sterility: sex-ratio data from hybrids between *Drosophila simulans* and *Drosophila sechellia* 507–511

KANG, XIAOLIN, FRANELI YADAO, R. DANIEL GIETZ and BERNARD A. KUNZ, Elimination of the yeast *RAD6* ubiquitin conjugase enhances base-pair transitions and G·C → T·A transversions as well as transposition of the Ty element: implications for the control of spontaneous mutation 285–294

KERREBROCK, ANNE W., WESLEY Y. MIYAZAKI, DEBORAH BIRNBY and TERRY L. ORR-WEAVER, The Drosophila *mei-S332* gene promotes sister-chromatid cohesion in meiosis following kinetochore differentiation 827–841

MACKAY, TRUDY F. C., RICHARD F. LYMAN and MICHAEL S. JACKSON, Effects of *P* element insertions on quantitative traits in *Drosophila melanogaster* 315–332

MARTÍN-CAMPOS, JESÚS M., JOSEP M. COMERÓN, NAOHIKO MIYASHITA and MONTSERRAT AGUADÉ, Intraspecific and interspecific variation at the *y-ac-sc* region of *Drosophila simulans* and *Drosophila melanogaster* 805–816

MCKENZIE, JOHN A., ANTHONY G. PARKER and JANET L. YEN, Polygenic and single gene responses to selection for resistance to diazinon in *Lucilia cuprina* 613–620

MODI, RAJIV I., LUCIO H. CASTILLA, SZONJA PUSKAS-ROZSA, ROBERT B. HELLING and JULIAN ADAMS, Genetic changes accompanying increased fitness in evolving populations of *Escherichia coli* 241–249

MORIYAMA, ETSUKO N., and TAKASHI GOJOBORI, Rates of synonymous substitution and base composition of nuclear genes in Drosophila 855–864

MORTON, DIANE G., J. MICHAEL ROOS and KENNETH J. KEMPHUES, *par-4*, a gene required for cytoplasmic localization and determination of specific cell types in *Caenorhabditis elegans* embryogenesis 771–790

MYLVAGANAM, SHANTHINI, and PATRICK P. DENNIS, Sequence heterogeneity between the two genes encoding 16S rRNA from the halophilic archaebacterium *Haloarcula marismortui* 399–410

NAVEIRA, H., and A. BARBADILLA, The theoretical distribution of lengths of intact chromosome segments around a locus held heterozygous with backcrossing in a diploid species 205–209

NEUMANN, PAUL E., Does sex of the offspring influence transmission ratio? 685–686

NUSSBAUM, ANAT, MOSHE SHALIT and AMIKAM COHEN, Restriction-stimulated homologous recombination of plasmids by the RecE pathway of *Escherichia coli* 37–49

OHTA, TOMOKO, Theoretical study of near neutrality. II. Effect of subdivided population structure with local extinction and recolonization 917–923

OKIMOTO, RONALD, JANE L. MACFARLANE, DOUGLAS O. CLARY and DAVID R. WOLSTENHOLME, The mitochondrial genomes of two nematodes, *Caenorhabditis elegans* and *Ascaris suum* 471–498

PAQUIN, CHARLOTTE ELDER, MICHAEL DORSEY, SCOTT CRABLE, KATRINA SPRINKEL, MELISSA SONDEJ and VALERIE MOROZ WILLIAMSON, A spontaneous chromosomal amplification of the *ADH2* gene in *Saccharomyces cerevisiae* 263–271

PEARCE, GAVIN P., and HAMISH G. SPENCER, Population genetic models of genomic imprinting 899–906

PEARLMAN, RONALD E., NORA TSAO and PETER B. MOENS, Synaptonemal complexes from DNase-treated rat pachytene chromosomes contain $(GT)_n$ and LINE/SINE sequences 865–872

PERKINS, DAVID D., Neurospora: the organism behind the molecular revolution 687–701

PLESSIS, ANNE, ARNAUD PERRIN, JAMES E. HABER and BERNARD DUJON, Site-specific recombination determined by I-*Sce*I, a mitochondrial group I intron-encoded endonuclease expressed in the yeast nucleus 451–460

POWELL, W., W. T. B. THOMAS, D. M. THOMPSON, J. S. SWANSTON and R. WAUGH, Association between rDNA alleles and quantitative traits in doubled haploid populations of barley 187–194

QUATTRO, JOSEPH M., JOHN C. AVISE and ROBERT C. VRIJENHOEK, Mode of origin and sources of genotypic diversity in triploid gynogenetic fish clones (Poeciliopsis: Poeciliidae) 621–628

SALZ, HELEN K., The genetic analysis of *snf*: a Drosophila sex determination gene required for activation of *Sex-lethal* in both the germline and the soma 547–554

SAWITZKE, JAMES A., and FRANKLIN W. STAHL, Phage λ has an analog of *Escherichia coli recO*, *recR* and *recF* genes 7–16

SCHWEINGRUBER, ANNE-MARIE, HANS FANKHAUSER, JERZY DLUGONSKI, COLETTE STEINMANN-LOSS and M. ERNST SCHWEINGRUBER, Isolation and characterization of regulatory mutants from *Schizosaccharomyces pombe* involved in thiamine-regulated gene expression 445–449

SEGARRA, CARMEN, and MONTSERRAT AGUADÉ, Molecular organization of the *X* chromosome in different species of the obscura group of Drosophila 513–521

SINCLAIR, D. A., A. A. RUDDELL, J. K. BROCK, N. J. CLEGG, V. K. LLOYD and T. A. GRIGLIATTI, A cytogenetic and genetic characterization of a group of closely linked second chromosome mutations that suppress position-effect variegation in *Drosophila melanogaster* 333–344

SINCLAIR, DONALD A. R., RODERICK B. CAMPBELL, FELICITY NICHOLLS, ERIC SLADE and HUGH W. BROCK, Genetic analysis of the *Additional sex combs* locus of *Drosophila melanogaster* 817–825

SLITER, TIMOTHY J., and LAWRENCE I. GILBERT, Developmental arrest and ecdysteroid deficiency resulting from mutations in the *dre4* locus of Drosophila 555–568

SMITH, DEBORAH L., and F. P. DOERDER, Multiple effects of mutation on expression of alternative cell surface protein genes in *Tetrahymena thermophila* 97–104

SPARKOWSKI, JASON, and ASIS DAS, Simultaneous gain and loss of functions caused by a single amino acid substitution in the β subunit of *Escherichia coli* RNA polymerase: suppression of *nusA* and *rho* mutations and conditional lethality 411–428

SPENCER, HAMISH G., and R. WILLIAM MARKS, The maintenance of single-locus polymorphism. IV. Models with mutation from existing alleles 211–221

TAKAHATA, NAOYUKI, YOKO SATTA and JAN KLEIN, Polymorphism and balancing selection at major histocompatibility complex loci 925–938

TORRONI, ANTONIO, THEODORE G. SCHURR, CHI-CHUAN YANG, EMÖKE J. E. SZATHMARY, ROBERT C. WILLIAMS, MOSES S. SCHANFIELD, GARY A. TROUP, WILLIAM C. KNOWLER, DALE N. LAWRENCE, KENNETH M. WEISS and DOUGLAS C. WALLACE, Native American miktochondrial DNA analysis indicates that the Amerind and the Nadene populations were founded by two independent migrations 153–162

TZENG, TZY-HWA, LINDA K. LYNGHOLM, CLARK F. FORD and CHARLOTTE R. BRONSON, A restriction fragment length polymorphism map and electrophoretic karyotype of the fungal maize pathogen *Cochliobolus heterostrophus* 81–96

VOWELS, JENNIFER J., and JAMES H. THOMAS, Genetic analysis of chemosensory control of dauer formation in *Caenorhabditis elegans* 105–123

WALSH, J. BRUCE, Intracellular selection, conversion bias, and the expected substitution rate of organelle genes 939–946

WANG, LEI, LAJWANT K. ROMANA and PETER R. REEVES, Molecular analysis of a *Salmonella enterica* group E1 *rfb* cluster: O antigen and the genetic basis of the major polymorphism 429–443

WASHBURN, TRACY, and JOSEPH E. O'TOUSA, Nonsense suppression of the major rhodopsin gene of Drosophila 585–595

WEBER, K. E., How small are the smallest selectable domains of form? 345–353

WEIL, CLIFFORD F., SYLVESTRE MARILLONNET, BENJAMIN BURR and SUSAN R. WESSLER, Changes in state of the *Wx-m5* allele of maize are due to intragenic transposition of *Ds* 175–185

WEIR, B. S., Independence of VNTR alleles defined as fixed bins 873–887

WOLF, PAUL G., and PAMELA S. SOLTIS, Estimates of gene flow among populations, geographic races, and species in the *Ipomopsis aggregata* complex 639–647

YEOM, YOUNG IL, KUNIYA ABE and KAREN ARTZT, Evolution of the mouse H-2K region: a hot spot of mutation associated with genes transcribed in embryos and/or germ cells 629–638

ZHAO, PING, and ETTA KAFER, Effects of mutagen-sensitive *mus* mutations on spontaneous mitotic recombination in Aspergillus 717–728

ZHIVOTOVSKY, LEV A., and MARCUS W. FELDMAN, On models of quantitative genetic variability: a stabilizing selection-balance model 947–955